WHAT IS CLAIMED IS:

1. An electrode structure comprising:

a silicon-containing film containing silicon as a principal constituent;

a barrier metal layer of titanium nitride rich in titanium as compared with a stoichiometric ratio formed on said silicon-containing film; and

a metal film with a high melting point formed on said barrier metal layer.

2. An electrode structure comprising:

a silicon-containing film containing silicon as a principal constituent;

a first barrier metal layer of titanium nitride rich in titanium as compared with a stoichiometric ratio formed on said silicon-containing film;

a second barrier metal film of titanium nitride including nitrogen in a ratio not less than a stoichiometric ratio formed on said first barrier metal layer; and

a metal film with a high melting point formed on said second barrier metal layer.

3. A method for fabricating an electrode structure comprising the steps of:

forming a silicon-containing film containing silicon as a principal constituent;

forming, on said silicon-containing film, a barrier

metal layer of titanium nitride rich in titanium as compared with a stoichiometric ratio;

forming a metal film with a high melting point on said barrier metal layer, whereby forming a multi-layer film including said silicon-containing film, said barrier metal layer and said metal film with a high melting point; and

patterning said multi-layer film into an electrode structure.

4. The method for fabricating an electrode structure of Claim 3,

wherein the step of forming said barrier metal layer includes a sub-step of using a target of titanium nitride rich in titanium as compared with a stoichiometric ratio and causing discharge in an inert gas including substantially no nitrogen, whereby depositing, on said silicon-containing film, the titanium nitride rich in titanium as compared with the stoichiometric ratio sputtered out from said target.

5. The method for fabricating an electrode structure of Claim 3,

wherein the step of forming said barrier metal layer includes a sub-step of using a target of titanium including substantially no nitrogen and causing discharge in a mixed gas of a nitrogen gas and an inert gas with a partial pressure ratio of the nitrogen gas lower than a nitriding point of said target, whereby depositing, on said silicon-

containing film, titanium nitride rich in titanium as compared with a stoichiometric ratio formed through a reaction between titanium sputtered out from said target and nitrogen ions included in said mixed gas.

6. The method for fabricating an electrode structure of Claim 3,

wherein no titanium silicide layer is formed on said silicon-containing film through annealing carried out on said electrode structure at a temperature of 600 or more.

7. A method for fabricating an electrode structure comprising the steps of:

forming a silicon-containing film containing silicon as a principal constituent;

forming, on said silicon-containing film, a first barrier metal layer of titanium nitride rich in titanium as compared with a stoichiometric ratio;

forming, on said first barrier metal layer, a second barrier metal layer of titanium nitride including nitrogen in a ratio not less than a stoichiometric ratio;

forming a metal film with a high melting point on said second barrier metal layer, whereby forming a multi-layer film including said silicon-containing film, said first barrier metal layer, said second barrier metal layer and said metal film with a high melting point; and

patterning said multi-layer film into an electrode

structure.

8. The method for fabricating an electrode structure of Claim 7,

wherein the step of forming said first barrier metal layer includes a sub-step of using a target of titanium nitride rich in titanium as compared with a stoichiometric ratio and causing discharge in an inert gas including substantially no nitrogen, whereby depositing, on said silicon-containing film, the titanium nitride rich in titanium as compared with the stoichiometric ratio sputtered out from said target, and

the step of forming said second barrier metal layer includes a sub-step of using said target and causing discharge in a mixed gas of a nitrogen gas and an inert gas with a partial pressure ratio of the nitrogen gas not less than a nitriding point of said target, whereby forming, on said target, a titanium nitride film rich in titanium as compared with the stoichiometric ratio and depositing, on said first barrier metal layer, the titanium nitride rich in titanium as compared with the stoichiometric ratio sputtered out from said titanium nitride film formed on said target.

9. The method for fabricating an electrode structure of Claim 7,

wherein the step of forming said first barrier metal layer includes a sub-step of using a target including

substantially no nitrogen and causing discharge in a mixed gas of a nitrogen gas and an inert gas with a partial pressure ratio of the nitrogen gas lower than a nitriding point of said target, whereby depositing, on said silicon-containing film, titanium nitride rich in titanium as compared with a stoichiometric ratio formed through a reaction between titanium sputtered out from said target and nitrogen ions included in said mixed gas, and

the step of forming said second barrier metal layer includes a sub-step of using said target and causing discharge in a mixed gas of a nitrogen gas and an inert gas with a partial pressure ratio of the nitrogen gas not less than the nitriding point of said target, whereby forming, on said target, a titanium nitride film rich in titanium as compared with a stoichiometric ratio and depositing, on said first barrier metal layer, the titanium nitride rich in titanium as compared with the stoichiometric ratio sputtered out from said titanium nitride film formed on said target.

10. The method for fabricating an electrode structure of Claim 7,

wherein no titanium silicide layer is formed on said silicon-containing film through annealing carried out on said electrode structure at a temperature of 600 or more.